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October 29, 1960
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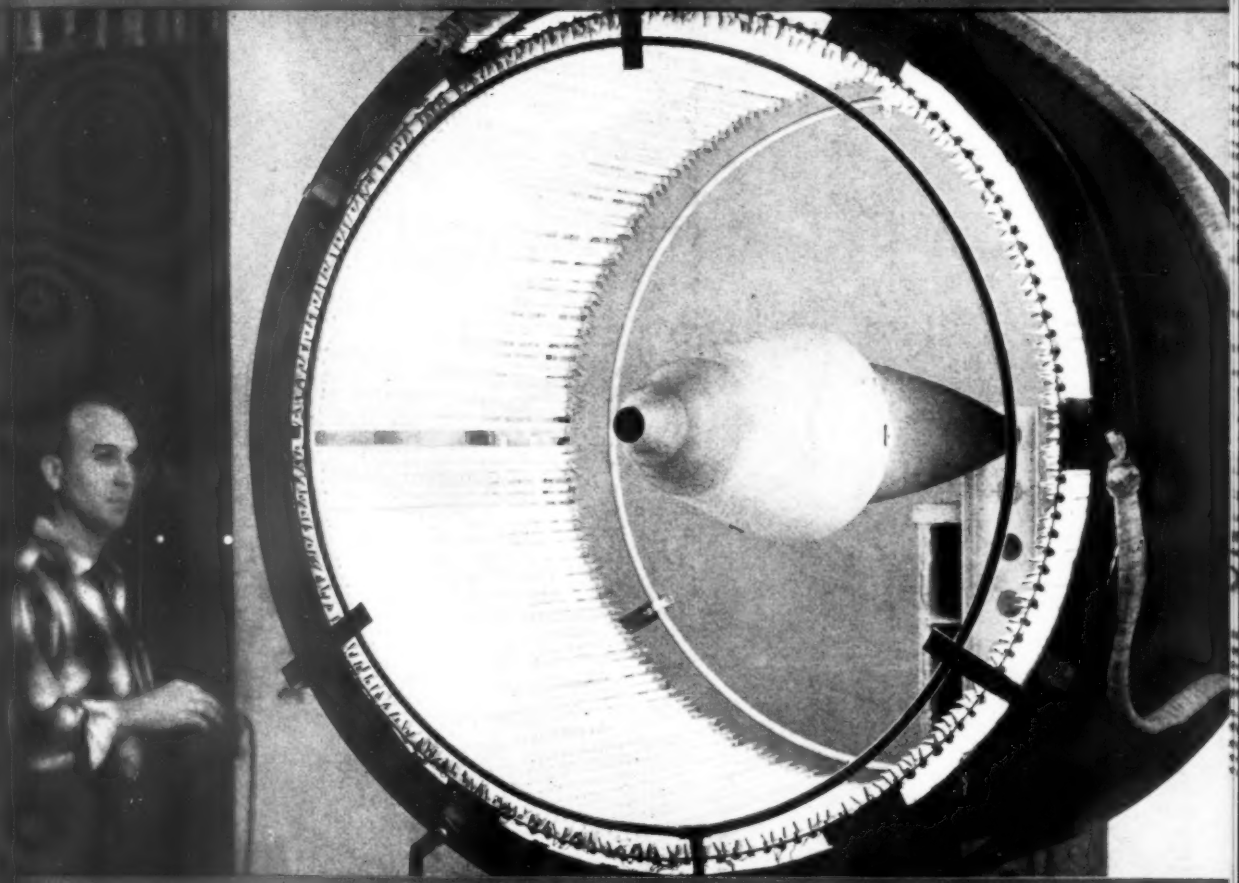
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



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MEDICINE

Chemical Checks Leukemia

The chemical 6-mercaptopurine has temporarily checked leukemia, but more research is needed for chemical agents to treat leukemia. Antibiotics are being investigated.

➤ TEMPORARY DISAPPEARANCE of leukemia in more than half the acute cases treated with 6-mercaptopurine (6MP) has been reported by Dr. Henry D. Diamond of Memorial-Sloan Kettering Cancer Center, New York.

In an interview with SCIENCE SERVICE Dr. Diamond said that about 50% of the children who get a remission of leukemia in its acute state will live a year, or twice as long as formerly.

Also ranking among the foremost effective drugs in treating acute leukemia are aminopterin and methotrexate, which combat folic acid, and cortisone.

"We need to continue research for chemical agents to treat leukemia," Dr. Diamond said, "and we are at present delving into antibiotic products on an experimental basis. So far we have found no better effects than we have had from 6MP.

"We must learn more of the process of the disease to get a more rational approach to treatment," he said. Advice for leukemia prevention is limited to warning against irradiation exposure and exposure to benzol, a volatile liquid hydrocarbon found in chemical industries.

Leukemia is cancer of the blood, which is characterized by disorderly and uncontrolled growth of the white blood cells. It accounts for nearly 10% of reportable cancer cases in Connecticut. This state is cited because it has the best cancer statistics in the country. The law requires that cancer be reported there.

Dr. Diamond opened the 1960-61 series of programs sponsored by the St. George Society, composed of medical students from the three schools of medicine in Washington, D. C. The programs are in cooperation with the Washington American Cancer Society.

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MILITARY SCIENCE

Test One-Man Missile

➤ ASSESSMENT TRIALS of the Vigilant, a new type of British anti-tank missile light enough to be carried by one man, are planned for early next year. Vigilant (short for the full designation, visual guided infantry light anti-tank weapon) has been developed over the past three and a half years as a non-governmnet project by Vickers-Armstrong (Aircraft) Ltd. It is a wire-guided missile and has no control box or other auxiliary gear.

The missile is launched from its carrying box and guided by a hand-held sighting device. It is claimed to be ready for instant use since no field assembly or testing is necessary. The total system weighs about 45 pounds and, in preliminary tests, it has been successfully dropped with and operated by paratroops.

So far it has cost about $3,000,000 to develop the missile. Vickers-Armstrongs became part of the British Aircraft Corporation in the recent mergers affecting the British aircraft industry, and Eric Beverley of BAC said his company hoped to achieve mass production of Vigilant at low cost. It could be in service by mid-1961.

Not only is Vigilant a handy infantry weapon, but its small size and weight make it readily adaptable for fitting to light reconnaissance and other fighting vehicles.

Its special feature is its accurate and easily operated control system. The average soldier can learn to use it quickly, five hours of simulator training being normal.

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MISSILE READY FOR LAUNCH—Directly from its carrying case.

LARGE EARRINGS — This Lydian aristocrat wears purple garments and large earrings on a terracotta frieze, found recently by a Harvard-Cornell expedition beneath the ruins of Sardis, Turkey. The frieze dates from the sixth century B.C. when Sardis, ancient capital of Lydia, was destroyed by the Persians.

DENTISTRY

Mouthwash Advertising Condemned by Dentist

➤ MOUTHWASH ADVERTISING gives the public a false sense of security about the health of their gums, Dr. Alvin C. Hileman, chairman of periodontics at the College of Physicians and Surgeons School of Dentistry, San Francisco, has charged.

Mouthwashes and lozenges only mask or suppress symptoms rather than cure periodontal, or gum, disease, Dr. Hileman told the American Dental Association's meeting in Los Angeles. Citing "before" and "after" photographs in magazines, he said that cessation of bleeding and improvement of gum color are not the sign of a cure.

He pointed out that the repeated use of products encouraged by advertising invites deeper destruction of supporting tissues before a dentist is consulted about the underlying cause of the trouble. "Remarkable" results are claimed after one or two weeks.

Once the mouth feels good again, Dr.

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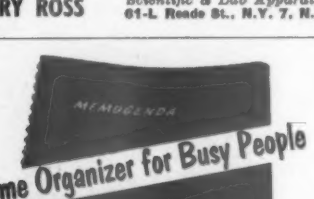

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Hileman said, many people never get around to seeing their dentist about a complete cure. A cure, he said, will correct the deformity and change the surrounding condition that caused it. He urged the general practitioner of dentistry to develop a "periodontal awareness" from the first examination to the finished oral rehabilitation.

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Gum Disease Serious

➤ A "DAILY FLOOD" of misinformation in advertising has falsely led the public to believe that teeth are lost primarily because of tooth decay, a Navy dentist has charged. This is not true, he said—more teeth are lost to gum disease than to all other causes.

Dr. Samuel Goldhaber, a captain in the U. S. Navy Dental Corps, told the American Dental Association meeting in Los Angeles that, despite the efforts of individual dentists and the ADA to inform the public of periodontal (gum) disease, "the voice of the dentist has been all but drowned out."

The "fantastic claims" and the "constant ballyhoo" of advertising has not only focused attention entirely and exclusively on tooth decay, but has also encouraged the neglect and inadequate hygiene that invite periodontal disease.

"The shocking fact is that most people do not keep their mouths really clean enough to keep them healthy," Dr. Goldhaber said.

Periodontal disease starts when the gums become inflamed. The gum swells away from the tooth and small open pockets are formed between tooth and gum. Bacteria collect in these pockets and the toxins they produce eat away the fine filaments that connect the tooth to the gum and bone. The pocket deepens, sometimes extending as deep as a fifth of an inch, the foundation of the tooth weakens, and eventually the tooth is lost.

• Science News Letter, 78:276 October 29, 1960

Hypnosis in Dentistry

➤ IT TAKES months or years of closely supervised study to learn who should or should not be hypnotized, Dr. Sidney Epstein, University of California School of Dentistry lecturer in psychology, San Francisco, told the American Dental Association meeting in Los Angeles.

Anxious and emotionally disturbed persons should not be hypnotized, Dr. Epstein warned, adding that student hypnotists are not cautioned that such people do not carry identifying cards. Hypnosis may be like opening a Pandora's box for these sick people and precipitate a real psychotic episode.

The average dentist or physician can learn how to hypnotize a person in 15 to 30 minutes, Dr. Epstein said, but such short-term courses do not give the necessary training in psychology and human behavior.

The partially trained hypnotist is tempted into helping the patients to control such habits as tooth grinding and nail-biting, Dr. Epstein pointed out, warning that to "release a patient from one set of behavior patterns may release a more serious set."

He said there are disadvantages to using hypnosis in daily practice even when the hypnotist is properly trained.

Only five to 26 percent of the public can achieve satisfactory sedation with hypnosis alone. In addition, patients who can be hypnotized effectively require a considerable investment of the dentist's time and energy to be indoctrinated or trained to hypnosis.

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Novas Del Mense in Interlingua will appear in next issue of SCIENCE NEWS LETTER.

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Edited by WATSON DAVIS

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NEUROLOGY

Test Drugs With Reflexes

Experiments are being done in Russia for observing the effects of drugs on behavior through the research on conditioned reflex, Marjorie Van de Water reports.

➤ RESEARCH ON CONDITIONED reflexes is being used by Russian scientists to learn the exact effects of new drugs. At the same time the drugs are used to reveal more about the workings of the nervous system and man's behavior.

This was brought out by reports of leading Russian physiologists and neurologists at a Pavlovian conference in New York, sponsored jointly by the USSR Academy of Medical Sciences and the New York Academy of Sciences.

An injection of chlorpromazine, one of the tranquilizers, completely eliminated the rise in blood pressure and other similar signs of pain reaction that normally are caused by applying an electric current to the sciatic nerve, according to the Russian Academician Dr. P. K. Anokhin.

But the tranquilizer did not eliminate the saliva secretions that result from weak stimulation of the tongue nerve.

Other scientists have found, he said, that displeasure in children or adults results when a characteristic slow rhythm of five to six cycles per second of electrical impulses is given to the brain cortex. This stress rhythm is somewhat lower in amplitude and more regular than the brain waves characteristic of rest.

A special technique for injecting chlorpromazine into a rabbit's ear from a distance, and without the awareness of the animal, made possible the experiments to observe the very different effects of drugs on fear and on human behavior.

When the animal was cringing in fear of an expected pain stimulation, the tranquilizer would cause him to come out of the fear posture. He moved about freely, searched for food and devoured it greedily. Brain waves typical of defense reaction were slowly replaced by those characteristic of rest.

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OCEANOGRAPHY

Danish Deep Sea Research

➤ TWO CENTURIES of Danish deep sea research are on view at the Smithsonian Institution, Washington, D. C., until Nov. 10.

The Danish King Frederik and Queen Ingrid opened this historic exhibit as part of their visit to the United States. This October it is exactly ten years ago the King and Queen visited the vessel Galathea on its second expedition, 1950-1952. Dr. Anton F. Bruun, professor of oceanology at the University of Copenhagen was the scientific leader of this expedition around the world.

The first around-the-world Galathea expedition took place in 1845-1847. Deep sea exploration in Denmark began with the Arabian Expedition to the Red Sea in 1761.

Among the discoveries made by the Danes are the breeding place of the American and European eel and a class of mollusks, Neopilina, supposed to have become extinct over 300,000,000 years ago. The exhibit includes three-dimensional wax-plate reconstructions of the gills and internal organs of the *Neopilina*.

The Danes brought back several thousand new species from their expeditions. One of the rarest catches made was that of the Abyssal brotulid fish *(Bassogigas)* from the Sunda Trench south of Java at the depth of 21,450 feet. Only three specimens of fish have been recorded between 21,000 and 22,500 feet. This may be the extreme limit of fish life in the ocean.

Other deep sea specimens shown are brittle stars *(Ophiura)* caught at 12,000 feet and a few caught at 20,100 feet in the Kermadec Trench (the deepest catch of brittle star). Two starfish *(Dytaster)* were caught at 14,400 feet north of Madagascar. One of these specimens has a partly digested fishbone protruding from the mouth and the distensible stomach.

RAT-TAIL FISH—Shown by Dr. Anton F. Bruun.

Two fish, belonging to the family of seasnails *(Liparidae)*, were caught at 20,100 feet in the Kermadec Trench, and blind deep sea lobsters with very feeble claws were found at 11,000 feet in the Bay of Bengal.

Most of these deep sea specimens have the same sandy color with only a few rusty spots or stripes.

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GEOPHYSICS

Diamonds May Be Formed As Meteorites Hit Earth

➤ DIAMONDS MAY BE FORMED in large meteorites when they hit the earth and not, as is now thought, be already formed before the meteorite hits, the Philosophical Society of Washington was told in Washington, D. C.

Dr. Edward Anders of the Enrico Fermi Institute of Nuclear Studies, University of Chicago, said that, after studying two iron meteorites with diamonds, he believes his new impact theory explains the formation of diamonds. He, and a graduate student, Michael Lipschutz, worked with fragments of the meteorite from Meteor Crater and a huge Czechoslovakian meteorite.

So far, scientists have believed that the high pressure needed to form diamonds was gravitational pressure inside the parent body from which the meteorite came, Dr. Anders said.

He said the pressure needed to form diamonds is 30,000 atmospheres, or about 500,000 pounds per square inch. If the old theory is true, a body as large as the moon or larger would be required to produce such pressures.

With Dr. Anders' impact theory, there is no need to expect that diamond-bearing meteorites came from a very large body. However, it would take a very large meteorite, one of considerably more than 100 tons, to produce pressures large enough to create the diamonds.

These huge meteorites, unlike small meteorites, hit the ground with the same velocity they have in space, between 10 and 15 miles per second.

Dr. Anders said that the iron meteorite of Meteor Crater, Ariz., has been estimated to weigh 2,000,000 tons by Dr. Ernest J. Opik of the University of Maryland. He said this meteorite hit the earth at about 10 miles per second. This meteorite, called Canyon Diablo after a nearby canyon, dug itself about 600 feet into the ground before it exploded and was vaporized.

Dr. Anders said Dr. Harvey H. Nininger of the American Meteorite Museum, Sedona, Ariz., has found that fragments of this meteorite containing diamonds showed signs of having been heated strongly and were found on the rim of the crater. The fragments without diamonds did not show any signs of reheating and were found away from the crater.

Four large meteorites are known to contain diamonds. Two stony meteorites, containing diamonds but not studied by Dr. Anders, are located in Russia and India.

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MEDICINE

Extrauterine Live Babies

➤ HOPE FOR LIVE BIRTHS when babies develop outside the uterus was seen in a report by two Jamaican doctors.

Four babies are alive and well following extrauterine pregnancy, Dr. D. B. Stewart and H. G. Dixon of the University College of the West Indies, Jamaica, report in the British Medical Journal, Oct. 15, 1960. The obstetricians describe ten cases of advanced extrauterine pregnancy in which all the mothers survived. Five babies were born alive, but one died from prematurity.

Operation is usually advised as soon as diagnosis of abnormal pregnancy is made. But in one case the obstetricians delayed action five weeks after the pregnancy was discovered at the 30th week in an attempt to save the child. The baby lived.

Weights of the four babies ranged from four pounds 11 ounces to six pounds five ounces. One of the four was mildly spastic after 18 months.

At the University College Hospital in Jamaica, the ten cases were the only ones that had been found with over 20 weeks of fetal growth, about one in 930 deliveries.

In extrauterine pregnancy the fertilized egg is arrested at some point between the ovary and the uterus and there undergoes more or less complete development. It may develop in the ovary or in any portion of the Fallopian tube. Although advanced cases rupture and continue development in the abdominal wall, authorities say that it is doubtful whether the egg can be implanted primarily upon this wall.

One of the signs guiding diagnosis is a constant souffle, or soft blowing sound, that is distinctly louder than the normal uterine sound. The obstetricians say that the sign is useful also in warning of the location of the placenta, the circular mass that affords communication between mother and child by means of the umbilical cord. It is important to know the placental site as the vessels may have to be tied off to prevent hemorrhage.

Removal of the placenta is a problem in these cases, and removal of the uterus to which it was attached in six of the patients was necessary.

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GENERAL SCIENCE

Nobel Prize Winners

➤ THE DISCOVERY of artificial immunity by the two scientists who were awarded the 1960 Nobel Prize for Medicine may make possible the safe transplant of human organs.

Human implications of their research also include the role played by the grandmother in determining her grandchildren's Rh positive and negative blood factors.

Sir Frank Macfarlane Burnet, director of the Walter and Eliza Hall Institute for Medical Research, Melbourne, Australia, and Peter Brian Medawar, Jodrell professor of zoology, University College, London, share the 1960 Nobel Prize money, equal to $43,625.

Dr. Burnet was knighted in 1951 for his research in virus diseases. In 1949 he started other work, however, which was the basis for the joint Nobel award.

Sir Macfarlane's theory of antibody production is based on his observation of the involuntary behavior of the fetus and newborn animal in the selection of antigens, substances causing the formation of antibodies. Any foreign material then entering the animal at a later stage after birth would cause the formation of antibodies which would reject the foreign matter.

On the basis of Sir Macfarlane's work, Dr. Medawar tried injecting fetal or newborn mice with material from a donor mouse on the theory that the injected mice would consider this as native material. Later on, a graft from the same donor or of the inbred strain of mice showed acquired immune tolerance to the foreign tissue antigen.

Dr. Sanford H. Stone of the laboratory of immunolgy, National Institutes of Health, said, "The discovery opens the door to vast research.

"Since we know the fetal animal has a stage of immunological inactivity to make him tolerant so that he will accept a graft after birth, it might be possible to recreate the physiological conditions of infancy in an adult and perhaps develop a drug that can produce artificial tolerance."

This might make organ transplants possible some day in humans.

Dr. Medawar, under a grant from the National Institutes of Health, is now studying the chemical nature of the antigens involved in graft rejections.

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ROCKETS AND MISSILES

Smithsonian Receives First Re-Entry Cone

➤ AN AIR FORCE Thor-Able re-entry vehicle, the RVX-1-5, safely returned from space last year, now has a place of honor in the National Air Museum of the Smithsonian Institution.

The once "out of this world" nose cone, scarred but intact, presents a sharp contrast to the colorful and decorative kites, the first form of man-made aircraft, also on exhibit.

The scorched, unglamorous space pioneer had travelled more than 5,000 miles down the Atlantic Missile range. In re-entering the earth's atmosphere at four miles per second, it was exposed to friction heat above 11,700 degrees Fahrenheit.

Lt. Gen. Bernard A. Schriever, Commander, Air Research and Development Command, in presenting the RVX-1-5 to the Museum, referred to the nose cone as "one of the earliest implements of a new era." Although designed as a weapon it "foreshadows future achievements in the peaceful arts of civilization, just as the first crude weapons of flint and metal did," he said.

"The techniques learned from military developments of this kind will help men on future flights to other planets—and perhaps to other stars," he predicted.

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60,000 LETTERS AN HOUR—

TECHNOLOGY

First Automated Post Office Opened

➤ THE FIRST AUTOMATED post office in the United States has been placed in official operation in Providence, R. I. It uses the latest in mail-handling machines and methods.

The new post office is designated Project Turnkey because it went into operation, figuratively, at the turn of a key. It was designed and constructed by Intelex Systems, Inc., a subsidiary of International Telephone and Telegraph Corporation.

The Post Office Department holds a 20-year lease on the building, with additional options. New equipment in the building is designed to handle 1,100,000 pieces of mail daily.

In Washington, D. C., city post office a letter sorter, developed by Pitney Bowes, Inc., has just been installed. It will handle 60,000 letters an hour. By use of a keyboard, an operator can sort more than 60 letters a minute.

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ROCKETS AND MISSILES

Music From Explorer VII

➤ EXPLORER VII, now past its first year in orbit, sounds on earth like a musical donkey.

The satellite's humming hee-haw tells an important scientific story—one easily understood by scientists working in such specialized fields as cosmic rays, micrometeorites, earth's radiation balance, aurora and ionospheric physics. But its information, when translated, may be most significant to the layman.

Dr. Verner E. Suomi of the University of Wisconsin, who designed the radiation balance experiment, said the information received about the loss of heat from the earth, as well as from the measurements of heat coming from the sun, may give better understanding of weather phenomena.

The data, collected by about 15 stations around the earth, provide for the first time on a global basis information relating to the heat balance between earth and sun that is believed responsible for our weather.

Experiments designed to gauge the effect of solar flares and other cosmic phenomena were reported by Dr. Brian O'Brien working with Dr. James Van Allen at the State University of Iowa. One experiment showed a relationship between auroras and the upper Van Allen radiation belt.

Explorer VII's scientific music may soon end. A timer was built into the satellite and set to stop its transmission approximately one year after launch, in order to release its frequency of 20 megacycles for future use.

Cosmic ray experiments were conducted with Explorer VII by Dr. Philip Schwed of the Research Institute of Advanced Studies, Baltimore, and Dr. Martin Pomerantz of the Bartol Research Foundation, near Philadelphia.

They investigated the heavy nuclei in cosmic rays to try to determine the origins of these high-energy particles.

Although such studies may not appear to have any practical benefit, Dr. Schwed told SCIENCE SERVICE the things that have had the greatest practical significance have resulted from scientific curiosity of what is little known and even less understood.

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ROCKETS AND MISSILES

Moon Landing in 1962

➤ WHETHER OR NOT the moon is made of green cheese, granite or meteorite-type rock will be known with scientific accuracy in 1962, Dr. A. R. Hibbs, chief, division of space sciences, Jet Propulsion Laboratory of the National Aeronautics and Space Administration, Pasadena, Calif., said. The NASA scientist spoke at the University of Maryland's Space Research and Technology Institute's third symposium.

The moon's composition will be revealed by the successful launch and landing on the moon of an instrumental space vehicle known as Ranger A, advanced model III, IV or V. The Ranger, a four-sided derrick-shaped vehicle, rests on a six-sided base. The satellite, launched by an Atlas Agena, will have been two and a half years in the planning and building when it makes its historic voyage.

It will be taking a gamma ray spectrum of the moon, checking for potassium content. "This will provide a first direct evidence of what material makes up the moon," Dr. Hibbs said. He said that Atomic Energy Commission scientists at Los Alamos, N. M., have drawn up spectra of green cheese, granite and other rocks. Most rocks contain potassium. Green cheese does not.

The Ranger will carry a 12-inch telescope for earth-gazing from the moon. It also will have instruments to measure the temperature of solar gas as it meets earth's upper atmosphere.

The space craft will take television scanning pictures, one every 12 seconds, as it approaches the moon. These will be telemetered immediately to earth, as will the other data recorded.

If the moon has radioactive materials such as have been found in meteorites, instruments in Ranger will reveal this to earth monitors. Upon landing, the most important experiment will be that involving the seismometer carried by Ranger.

"This will tell us much about the moon, if we get any seismic signals," Dr. Hibbs said. The seismometer is built to withstand the estimated landing impact at 300 miles an hour.

After the Ranger is launched in the nose cone of the Atlas Agena rocket, the nose cone separates. The Ranger then unfolds two rectangular tapered solar panels that spread out like wings. These seek the sun and will propel the satellite forward in a revolving motion until the panels are fully exposed to the sun. A four-foot disk-shaped antenna on the Ranger is designed to respond to a 960-megacycle tone signaled from earth.

The highly sophisticated satellite is designed to respond to "requests" from earth as well as to function with mechanical intelligence of its own.

If the monitors on earth do not get a response to the signal, they can request the antenna to try again.

The Rangers will be the forerunner of instrumented satellite exploration of the planets, beginning with Venus and Mars. These may begin in 1962, with a Mariner satellite, launched by an Atlas-Centaur rocket.

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OPERATION GREEN CHEESE—How the Ranger satellite will look.

ROCKETS AND MISSILES

Three-Axis Table Eliminates Missile Risks

➤ A THREE-AXIS flight simulator is enabling engineers to fly a missile without actually launching it, and to find out if the guidance and flight control systems of the missile are working properly before these systems are put to costly, and sometimes risky, flight tests.

Engineers at Lockheed's Missile and Space Division in Sunnyvale, Calif., missile system manager for the Navy's Polaris, have combined a mechanical simulator with an analogue computer. Almost daily they take the Navy's Polaris submarine missile on many flights—without actually launching it into space.

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MEDICINE

New Type of Operation For High Blood Pressure

➤ HIGH BLOOD PRESSURE resulting from insufficient flow of blood to the kidneys has been treated by a new operation performed experimentally on dogs. A short segment of ileum, or small intestine, near the kidney was used to bring about transfer of blood supply.

Drs. James F. Glenn, B. Marvin Harvard and Clyde L. Deming of Yale University reported the operation to the Clinical Congress of the American College of Surgeons meeting in San Francisco.

Although surgery has previously restored normal blood pressure in a limited number of patients who have had major defects in the kidney artery, the operation has not helped the majority of patients with high blood pressure who have kidney damage. Such patients suffer from diffused insufficiency of blood supply in the general kidney structure rather than an insufficiency because of a localized clot or hardening of the kidney artery.

The surgeons stripped the segment of ileum of its lining and joined the denuded muscular layer to the kidney from which the capsule or membranous envelope was removed.

They said the most successful transfer of blood supply occurred when they established a need for blood in the animals through constricting their arteries either partially or completely.

• Science News Letter, 78:280 October 29, 1960

ASTRONAUTICS

Scientists Plan Rockets Free of Earthly Germs

➤ UNLESS EXTREME CARE is taken, rockets into outer space will spread to the moon and planets contaminating dirt of the earth, including both harmless and disease-producing bacteria.

If unclean rockets are fired, then scientists will never be able to tell whether life and other manifestations of the earth exist in other parts of the solar system.

Experts are hard at work on the prevention of space contamination, and even the Russians say they are working on the problem.

Drs. Charles R. Phillips and Robert K. Hoffman, U. S. Army Chemical Corps scientists, report in the journal, Science, 132:991, 1960, that preliminary experiments at the germ warfare center, Fort Detrick, Md., show sterilization is needed in all stages of design and construction of the space vehicle, including the tiniest electronic parts. Some parts are sterile when received from the manufacturer, but more are not.

A crash landing on a hard surface might completely shatter not only the vehicle but its entire contents. Organisms present even in hermetically sealed components would be released. Bacteria might survive a crash landing far better than metal or plastic objects.

The scientists see no difficult problems in sterilizing the outside and interior of the space vehicle itself and the third stage rocket and suggest ethylene oxide gas contained by a huge plastic bag would do the job.

Scientists are in general agreement that any chance of biological contamination should be avoided most carefully until the moon and planets have been carefully studied. An international Committee on Contamination by Extraterrestrial Exploration has formally recommended that all efforts be made to prevent any biological pollution of space.

• Science News Letter, 78:280 October 29, 1960

ARCHAEOLOGY

Danish Collection Shows Rare Stone Age Objects

➤ AN HISTORIC exhibition of the largest collection of Danish art ever to cross the ocean, including the oldest known examples of Danish archaeological objects, was opened by King Frederik IX and Queen Ingrid of Denmark at the Metropolitan Museum in New York.

Presented under the patronage of King Frederik and President Eisenhower, the exhibition covers 10,000 years of art, beginning with the tiny amber figures of a bear and a bird, carved between 8,000 and 5,000 B.C., and Stone Age battle-axes, harpoons and pottery from the same period.

From the Bronze Age are a pair of spiraling, S-shaped lurs that represent two of the world's earliest wind instruments. They are more than six feet long and 2,500 years old. Other Bronze Age objects include swords, axes and belt plates as well as crafted gold jewelry.

The Iron and Viking ages are represented by gold and silver jewelry showing highly developed skills and by iron swords and battle-axes.

• Science News Letter, 78:280 October 29, 1960

NUTRITION

Easier to Carry Lead Than Excess Body Weight

➤ IT TAKES MORE energy to carry 50 pounds of excess fat than to carry 50 pounds of lead, researchers reported at the American Dietetic Association meeting in Cleveland.

Drs. E. R. Buskirk, R. H. Thompson, R. Moore and G. D. Whedon of the National Institute of Arthritis and Metabolic Diseases, Bethesda, Md., studied the metabolism of four obese women maintained on 650 to 1,000 calories per day. They found that it was easier for them to walk on a treadmill while wearing lead vests than to walk while carrying the same weight in excess fat.

During the walking period, the energy exerted and the calories burned up are increased. But for the remainder of the day, in heavy persons, less energy than usual is used. Thus the total calories used by the body during the whole day is less than if no walking is done.

Studies of one obese individual subjected to cold also showed that about 50% less energy is used by the fat than the thin in responding to cold.

• Science News Letter, 78:280 October 29, 1960

IN SCIENCE

GENERAL SCIENCE

International Standard Of Length Adopted

➤ A NEW INTERNATIONAL standard of length was officially adopted in Paris by the international General Conference on Weights and Measures.

The new standard defines the meter as 1,650,763.73 times the wavelength of the orange-red spectral line of light emitted from atoms of krypton 86.

With the krypton standard now designated as the primary standard, the platinum-iridium meter bar housed at the International Bureau of Weights and Measures in Sevres, France, drops to the position of a secondary standard. The chief advantages of the change are that the primary standard is now non-destructible and that the meter can be measured more precisely.

• Science News Letter, 78:280 October 29, 1960

SEISMOLOGY

Creeping Rock Damages California Winery

➤ ONE SIDE of the San Andreas fault, a crack in the earth's surface responsible for the devastating San Francisco earthquake of 1906, is "creeping" away from the other at a rate of about one-half an inch per year.

This movement was measured by noting changes in the positions of rocks under a winery near Holilster, Calif., that have caused damage to buildings and other property there.

Karl V. Steinbrugge and Edwin G. Zacher of the Pacific Fire Rating Bureau, San Francisco, measured the separation of pairs of marks along the line where the creeping of the rock occurred.

The measurements and the damage to buildings suggested that movement of the underlying rock, which is part of the San Andreas fault, has continued for 50 years or more.

Many earthquakes occur along the San Andreas fault, but the creep measurement does not necessarily mean that another devastating one is immiment.

Don Tocher of the University of California's Seismographic Station at Berkeley reported that the creep recorders, designed to measure continuously the movement of adjacent sections of the concrete floor, were installed in the main buildings of the winery.

He said that creeping occurs largely in spasms of rather short duration, mostly on the order of a week, separated by intervals of weeks or even months where little or no creeping takes place. The scientists reported their findings in the Bulletin of the Seismological Society of America. 50:389, 1960.

• Science News Letter, 78:280 October 29, 1960

NCE FIELDS

MEDICINE

Tiny Bundles of Glass Give Doctors New Tool

➤ TINY BUNDLES of glass fibers that will conduct light are being tested as new tools for doctors to use in medical examinations.

Drs. J. H. Hett and L. E. Curtiss of the American Cystoscope Makers Inc., Pelham, N. Y., reported to the American Optical Society meeting in Boston that flexible fibers have been used to carry images in a duodenoscope and a ureterscope.

The duodenoscope is 34 inches long, with a diameter a little less than half an inch. The ureterscope is 30 inches long, with a diameter of one-seventh of an inch.

A flexible bronchoscope and coloscope using fibers are in design stages, they reported. Use of glass fiber "ropes" gives instruments for medical examinations that eliminate "blind regions" caused by curves in body organs.

Fiber optics can also be used to transmit images in the invisible infrared, Drs. N. S. Kapany and D. A. Pontarelli of Armour Research Foundation, Chicago, reported to the meeting. Among the materials that have proved most suitable are arsenic trisulfide, silver chloride and crown glass.

• Science News Letter, 78:281 October 29, 1960

MEDICINE

Nine Medical Scientists Win 1960 Lasker Awards

➤ NINE MEDICAL scientists from the United States, England and West Germany, along with two U. S. groups, have won the 1960 Albert Lasker Awards for breakthroughs in medical research and advances in public health.

Outstanding in the field of biology is demonstration that the chemical of heredity in human cells, deoxyribonucleic acid (DNA), is made up of two long intertwining molecular chains, a double helix.

Honored for this discovery, which may enable scientists to alter the heredity of plants, animals and man, are Drs. Francis H. C. Crick of Cambridge University, Cambridge, Eng., James D. Watson of Harvard University and Maurice H. F. Wilkins of King's College, London.

Eight of the individual recipients will receive $2,500 each, gold statuettes of the Winged Victory of Samothrace, symbolizing victory over death and disease, and individual citations. A ninth scientist, Dr. Abel Wolman, an engineer at Johns Hopkins University, Baltimore, will receive a special $5,000 award for contributions to public health and safety in sanitary engineering, water supply development and control of radiation hazards.

The two groups honored in the field of public health are the Crippled Children's Program, Children's Bureau, U. S. Department of Health, Education and Welfare, and the Chronic Disease Program, California Department of Public Health, Berkeley.

The other individual recipients in medical research are:

Dr. James V. Neel, University of Michigan, Ann Arbor, and Lionel S. Penrose, University of London, for contributions to the development of modern human genetics and significant findings about the effect of nuclear and other radiation on human beings and their offspring.

Drs. Ernst Ruska, Berlin Institute of Technology, West Germany, and James Hillier, RCA Research Laboratories, Princeton, N. J., for the design, construction and perfection of the electron microscope as an essential tool of modern medical research.

In public health, Dr. John B. Grant, University of Puerto Rico, San Juan, for more than 40 years of promoting the health and well-being of the peoples of pre-communist China, post-war India and present-day Puerto Rico.

Albert Lasker Awards are given annually by the Albert and Mary Lasker Foundation through the American Public Health Association.

• Science News Letter, 78:281 October 29, 1960

MEDICINE

Blood Volume Measured By Atomic Device

➤ RAPID MEASUREMENT of blood volume in patients by an automatic device called the Volemetron was reported at the Clinical Congress of the American College of Surgeons in San Francisco.

Drs. John A. Williams and Jacob Fine of the Harvard Medical School and Beth Israel Hospital, Boston, described the machine, which requires less than 15 minutes for accurate measurement.

The Volemetron applies a new approach to an old principle of injecting into the blood stream a measured amount of "labeled" material such as human blood protein tagged with a small amount of radioactive iodine.

About ten minutes later, after the injected material has been thoroughly mixed in the circulation, a blood sample is taken and its radioactivity measured.

Knowing the amount injected and the extent to which it has been diluted, the investigators said one can readily calculate the volume of blood by which the material must have been diluted.

The laboratory procedures usually required to carry out this isotope dilution principle have been so time-consuming and relatively inaccurate that they have been limited mainly to research.

There are only two Volemetrons in existence now, but future manufacturing and marketing will be done by Perkin-Elmer Corporation, Norwalk, Conn.

Not only can blood measurement be rapidly and accurately computed by the new device, the syringes, needles and sample tubes can be thrown away, thus avoiding breakage and cleaning of special glassware.

• Science News Letter, 78:281 October 29, 1960

PSYCHOLOGY

Human "Guinea Pigs" Need Special Protection

➤ HUMAN "GUINEA PIGS," particularly those in psychological research, need special protection.

Dr. Dael Wolfle, executive officer of the American Association for the Advancement of Science, says that increasing research on human behavior will surely involve some danger to the subjects. He urges the idea of "liability without fault" to protect human guinea pigs.

To learn the kinds of behavior that can be expected of an astronaut in the super-solitary confinement of space, volunteers must experience actual stressful conditions. Those who do so run some risk of personal damage, Dr. Wolfle reports in Science, 132:990, 1960.

He points out that there are differences between medical and psychological research. One difference is that the human volunteer in psychological research cannot always be told the prospective results. If the experiment cannot be fully explained, Dr. Wolfle asks, to what has the volunteer consented?

Another difference is that normal, healthy subjects are not themselves apt to benefit directly from the experiments. New medicines or operations are usually tested on ill patients who may directly benefit.

Because of these and other differences, the guides set by past medical experience are inadequate to protect human guinea pigs in psychological research.

Dr. Wolfle says that the idea of "liability without fault," proposed in the Duke Law Journal, offers a partial solution. Under this concept, a subject damaged as a result of a psychological experiment would be entitled to treatment and rehabilitation, or to receive compensation for damages.

Both the subject and the experimenter would be protected under this plan, Dr. Wolfle concludes. The experimenter would not be considered at fault but would have been acting in the interest of society. Thus society, acting through appropriate government channels, would assume the costs of rehabilitation or compensation, just as society, also through the government, supports much psychological research.

• Science News Letter, 78:281 October 29, 1960

"Thermal Barrier" Tests For Heat Resistance

See Front Cover

➤ INFRARED, PENCIL-THIN quartz lamps have been developed into a simulated thermal barrier for testing heat resistance of materials to be used in space vehicles.

This device, used at the National Aeronautical and Space Administration's Research Center at Langley, Va., produces heat about a third the intensity of the surface of the sun.

The nose cone tested in the cylindrical radiator on the cover of this week's SCIENCE NEWS LETTER is heated by 225 tubular 2,500-watt General Electric lamps. These lamps reach 3,100 degrees Fahrenheit.

• Science News Letter, 78:281 October 29, 1960

PHYSICS

The Things in Space

Bits of matter, bursts of energy have been detected in space by United States and Russian space probes. Radiation that could endanger astronauts has been discovered.

➤ EMPTY INTERPLANETARY SPACE "ain't necessarily so." There are things out there.

Bits of matter. Bursts of energy. And great patterns of force—magnetic, gravitational and electric. With satellites, scientists are learning more about these phenomena.

Millions upon millions have been spent on satellites and little by little scientists are learning about the dangers astronauts will meet in the gaps between the planets.

These gaps seem to contain very dilute gases, their atoms very widely spaced. Scientists think these gases are primarily hydrogen. But space also contains great energy that cannot be accounted for by the normal motion of the gases.

This energy is radiation that, in quantity, could kill an unprotected spaceman. Some of the radiation is cosmic radiation that can penetrate 17 feet of lead. It is thought to originate mostly from outside the solar system. Some cosmic rays, however, come from our sun.

Other types of radiation stream from the sun too. This radiation is not as "hard"—the scientists' word for penetrating—as cosmic radiation.

"Soft" light and heat rays are produced at a fairly constant level. More erratically, the sun produces ultraviolet radiation, some of the shorter waves of which come through the earth's atmosphere and cause sunburn.

Ultraviolet Can Alter Gases

In space, the ultraviolet rays are abundant enough to alter interplanetary gases. Ultraviolet rays ionize the gases, knock out their atoms' electrons so that the atoms are short on electrons.

Thus normally neutral atoms are changed into electrically charged ones. Usually, charged atoms would attract and collect their lost electrons until they became neutral again, but the gases in space are so dilute that the atoms and electrons are too far apart to do this. So the atoms remain charged.

A fully ionized gas is called plasma. Plasma is like no other gas state because it conducts electricity and is influenced by magnetic fields. Under certain conditions a plasma can disrupt radio communications between a space vehicle and the earth.

The sun also radiates radio waves and charged particles.

Ionized gas or plasma is attracted by the sun's gravity. This gravity keeps the plasma from escaping into interstellar space and also pulls interstellar gases into the solar system. Most of these gases, however, originally were spewed from the sun in occasional solar eruptions. Some of the gases may also come from the sun in a constant process somewhat like evaporation.

Besides gravity, solar radiation pressure may also influence the distribution of the gases. Many earth satellites, particularly the balloon-like Echo, have had their paths shifted by the faint but steady pressure of this radiation.

This pressure is only one-fiftieth of an ounce on Echo, yet each day it pushes the satellite 3.5 miles closed to the earth.

Near earth, and presumably near other planets with an atmosphere, ultraviolet and X-rays from the sun ionize the outer atmosphere. That is why the earth's upper atmosphere is called the ionosphere. The solar radiation cannot penetrate very deeply into the atmosphere, thus the ionosphere creates an insulating blanket between the more fully ionized interplanetary plasma and the lower atmosphere.

The density of the atmosphere varies at upper altitudes in harmony with the rotation of the sun, an American scientist learned from the Russian satellite Sputnik II.

Dr. Luigi G. Jacchia of the Smithsonian Astrophysical Observatory made this discovery by studying the air drag that showed up in tracking data from the Russian moon and confirmed the data with America's grapefruit sized Vanguard I.

The drag, Dr. Jacchia found, has a 27-day pattern. The sun has a 27-day rotation.

Thus, scientists now believe that when an active region of the sun faces the earth, radiation increases and heats the earth's outer atmosphere. This heating causes an expansion that carries more atmosphere up to the area of the satellite and therefore exerts more drag on it.

But the radiation in space affects the area of the earth in still another way:

Satellites Explorer I and Explorer III revealed that the earth is surrounded by trapped radiation. Dr. James A. Van Allen, the State University of Iowa professor in charge of instrumentation for these satellites, concludes from Geiger counter readings in the satellites that the radiation consists of charged particles restrained by the earth's magnetic field. Explorer IV confirmed this.

The United States also exploded three small atomic bombs high above the earth. This "Argus Experiment" injected high-energy electrons into the earth's magnetic field and thus created artificial radiation belts.

Probes Show Radiation Zones

In late 1958 and early 1959, space probes such as Pioneers III and IV and Mechta showed that the belt of radiation had an inner zone and outer zone, separated by a less intense area. The probes showed the radiation in the belt was stronger and more dangerous to astronauts than was radiation in space and that the radiation in the inner zone remained about the same while

GRAPEFRUIT SHOT—Engineers install a sphere atop the third stage of a Vanguard test rocket. The Vanguard satellite has provided a wealth of data on the earth, atmosphere and space.

the outer zone showed great fluctuations, probably connected with solar activity.

The earth's radiation belt may be the greatest radiation danger an astronaut will face. But he could also be harmed if he should be in space when the sun bursts with solar flares.

Pioneer IV in March, 1959, showed the energy particles of the earth's outer radiation belt increased after solar disturbances. Other satellite and probe data showed connections between these activities and visible auroras.

Besides the magnetic and gravitational forces and the streams of plasma and radiation, interplanetary space also has meteors that can puncture satellites and space probes.

Meteors may be great masses of several hundred tons or, much more commonly, tiny specks that would merely sandblast a satellite or probe. If one of the big ones, like those that caused giant craters in Arizona and northern Siberia, should strike New York at a meteoric speed of many miles a second, the resulting blast waves would destroy the city as suddenly and certainly as a nuclear bomb. Luckily, large meteors are very rare.

Meteors that reach the earth's surface are called meteorites. Wholly metallic meteorites, called siderites, are chiefly an iron-nickel alloy. Some meteorites are composed of silicates and metal; these are called siderolites. Meteorites composed almost entirely of silicates are called aerolites.

When meteors from space hit the earth's atmosphere, they become "shooting stars" heated to incandescence by friction with the air. Meteors that are very fast moving are believed to come from interstellar space, but scientists know very little more about them than that.

Some of the slower ones seem to be in the orbits of comets.

If a spherical vehicle with a one yard diameter and one-quarter inch thick skin were sent into space, some scientists think the mean average time between punctures might be 150,000 years. Other scientists calculate the mean average as short as 300 years.

• Science News Letter, 78:282 October 29, 1960

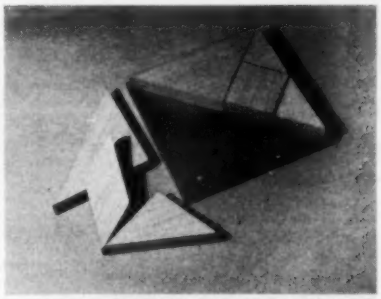
PHYSICS

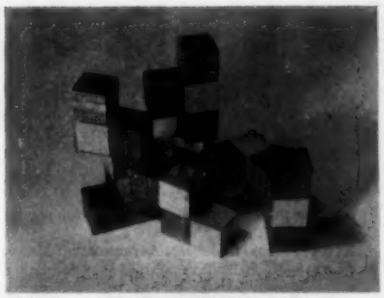
Electron Accelerator Will Be Built for NBS

A $1,700,000 accelerator that can hurl an intense beam of electrons at speeds close to the velocity of light with a very high precision will be built for the National Bureau of Standards in Washington, D. C. The intense source of electrons will provide the NBS with greatly advanced research and engineering capabilities.

The new linear electron accelerator, or Linac, will be 100,000 times more powerful than existing NBS high energy equipment. Measuring 100 feet in length, Linac will produce electron beams with peak energies up to 150,000,000 electron volts and power outputs of 40 kilowatts or more. It will be built by the High Voltage Engineering Corporation, Burlington, Mass.

• Science News Letter, 78:283 October 29, 1960





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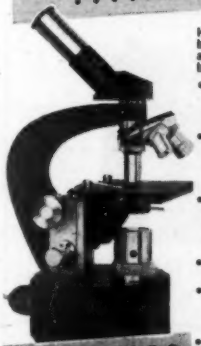

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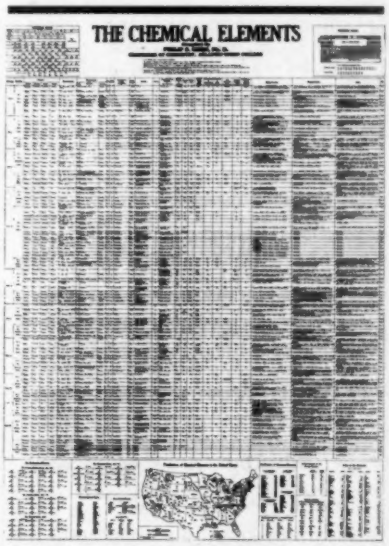

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Crystalline form and color
Specific gravity or density
Melting and boiling point
Specific heat
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• Books of the Week •

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THE A. R. R. L. ANTENNA BOOK—Foreword by A. L. Budlong—*Am. Radio Relay League*, 9th ed., 320 p., illus., paper, $2. Text on the theory and practice of antenna design for use by amateur radio operators.

AMERICA'S FIRST WOMAN ASTRONOMER: MARIA MITCHELL—Rachel Baker and Joanna Baker Merlen—*Messner*, 192 p., $2.95. Biography for boys and girls.

ARCHAEOLOGY IN THE HOLY LAND—Kathleen M. Kenyon—*Praeger*, 326 p., illus., $6.95. Account of how archaeologists have pieced together the history of Biblical civilizations.

ASTRONOMY—H. C. King—Watts, F., 256 p., illus. by T. Maloney, $4.95. Clearly written and profusely illustrated text for the layman.

THE BALANCE OF NATURE—Lorus J. and Margery Milne—*Knopf*, 136 p., illus. by O. J. Murie, $5. The constant battle for survival among the species.

CHANCE, SKILL, AND LUCK: The Psychology of Guessing and Gambling—John Cohen—*Penguin*, 201 p., illus., paper, 95¢. Analysis of those modes of behavior called "guessing."

DARING YOUNG MEN IN THE FLYING MACHINES—Helen Orlob—*Nelson*, 183 p., illus., $3.25. Story of nine overwater flights that made aviation history.

DIGGING UP AMERICA—Frank C. Hibben—*Hill & Wang*, 239 p., photographs, $5. Tells how modern science measures the antiquity of unearthed objects and pieces together ancient cultures.

EDISON EXPERIMENTS YOU CAN DO—Marjorie Van de Water—*Harper*, 129 p., photographs by Fremont Davis, $2.50. Shows young scientists how to perform experiments such as those that taught Thomas Alva Edison what he learned about electricity.

ELECTRONICS AND NUCLEONICS DICTIONARY—Nelson M. Cooke and John Markus—*McGraw*, 542 p., illus., $12. Over 13,000 definitions of technical words, synonyms, and abbreviations currently used in these fields.

ELIHU THOMSON: BELOVED SCIENTIST—David O. Woodbury, appreciations by James R. Killian, Jr. and Owen D. Young—*Harvard Univ. Press (Museum of Science)*, 358 p., illus., $6. Biography of the pioneer inventor.

ENGINEERS UNLIMITED: Your Career in Engineering—Harry Edward Neal—*Messner*, 192 p., photographs, $3.50. Gives young people an idea of what they can expect to do in various engineering fields, and what preparation they should have.

THE FIRST BOOK OF MEASUREMENT—Sam and Beryl Epstein—*Watts, F.*, 60 p., illus. by W. Buehr, $1.95. Presents scales and devices by which the world does its measuring.

THE FIRST BOOK OF THE MEDITERRANEAN—Gerald Gottlieb—*Watts, F.*, 60 p., illus. by Lili Rethi, $1.95. The story of the Mediterranean Sea for boys and girls.

FOOD FOR AMERICA'S FUTURE—Firman E. Bear and others, foreword by B. B. Turner—*McGraw (Ethyl Corp.)*, 167 p., illus., $3.95. View by agricultural experts of the country's future resources.

THE HERITAGE OF MAN: A History of the World—Goldwin Smith—*Scribner*, 881 p., illus., $12.50. Stresses man's achievements in art, government, commerce, science, literature, philosophy and religion.

HUMAN HEREDITY—Ashley Montagu—*New Am. Lib.*, 364 p., illus., paper, 75¢. For the layman, study of inheritance and how it is affected by environment. A new edition brought up to date by inclusion of new material.

HYPNOSIS IN TREATMENT—William Moodie—*Emerson*, 168 p., $4. Sets forth what hypnosis can do as a practical procedure in therapy for neuroses and psychosomatic ills.

ICELAND: Impressions of a Heroic Landscape—Alfred Nawrath, Sigurdur Thorarinsson and Halldor Laxness—*Rand McNally*, 57 p., 40 color photographs, $17.50. Superb photography and text intended to give an idea of Iceland's fantastic landscape.

INTRODUCTION TO GEOLOGY (AN OUTLINE)—Alfred Livingston Jr.—*N-P Pub.*, 55 p., illus., paper, $3. Presents to the student the fundamental principles of geology.

AN INTRODUCTION TO PSYCHOANALYTIC RESEARCH—Kenneth Mark Colby—*Basic Bks.*, 117 p., $3. For the beginning investigator.

INTRODUCTION TO THE GAS TURBINE—D. G. Shepherd—*Van Nostrand*, 2nd ed., 300 p., illus., $7.75. Emphasis is put on the principles of the gas turbine, rather than on details.

LAND OF THE PHARAOHS—Leonard Cottrell—*World Pub. Co.*, 127 p., illus. by R. M. Powers, $2.95. Introduces boys and girls to ancient Egypt.

LOWIE'S SELECTED PAPERS IN ANTHROPOLOGY—Cora Du Bois, Ed., *Univ. of Calif. Press*, 509 p., $10. Selection of essays by the pioneer ethnographer, with syllabus of seminar on his works.

MAP MAKING: The Art That Became a Science—Lloyd A. Brown—*Little*, 217 p., $4.75. The story of maps and of the people who made them.

MENTAL HEALTH IS EVERY DAY: Blondie Calendar 1961—*N. Y. State Dept. of Mental Hygiene*, 16 p., illus., paper, single copies free upon request direct to publisher, 240 State St., Albany, N. Y.

MICHELSON AND THE SPEED OF LIGHT—Bernard Jeffe—*Doubleday*, 197 p., illus., paper, 95¢. Biography of the first American Nobel Prize winner in physics, 1907.

OXFORD REGIONAL ECONOMIC ATLAS: The Middle East and North Africa—Prepared by The Economist Intelligence Unit and Cartographic Dept. of Clarendon Press—*Oxford Univ. Press*, 135 p., 60 p. of maps, $10; paper, $5.95.

PASTEUR AND MODERN SCIENCE—Rene Dubos—*Doubleday*, 159 p., paper, 95¢. Microbiologist's readable account of the remarkable vision and discoveries of the great scientist.

THE PROCESSES OF ONGOING HUMAN EVOLUTION—Gabriel W. Lasker, Ed.—*Wayne State Univ. Press*, 108 p., $3.75. Six essays presented at American Anthropological Association meeting at Mexico City, December, 1959.

THE PSYCHOLOGY OF CRIME—David Abrahamsen—*Columbia Univ. Press*, 358 p., $6. Psychiatrist reports on recent research findings in the field of criminal psychopathology, both in U. S. and Europe.

RORSCHACH PSYCHOLOGY—Maria A. Rickers-

(Continued on p. 287)

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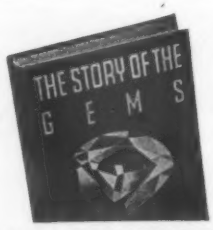

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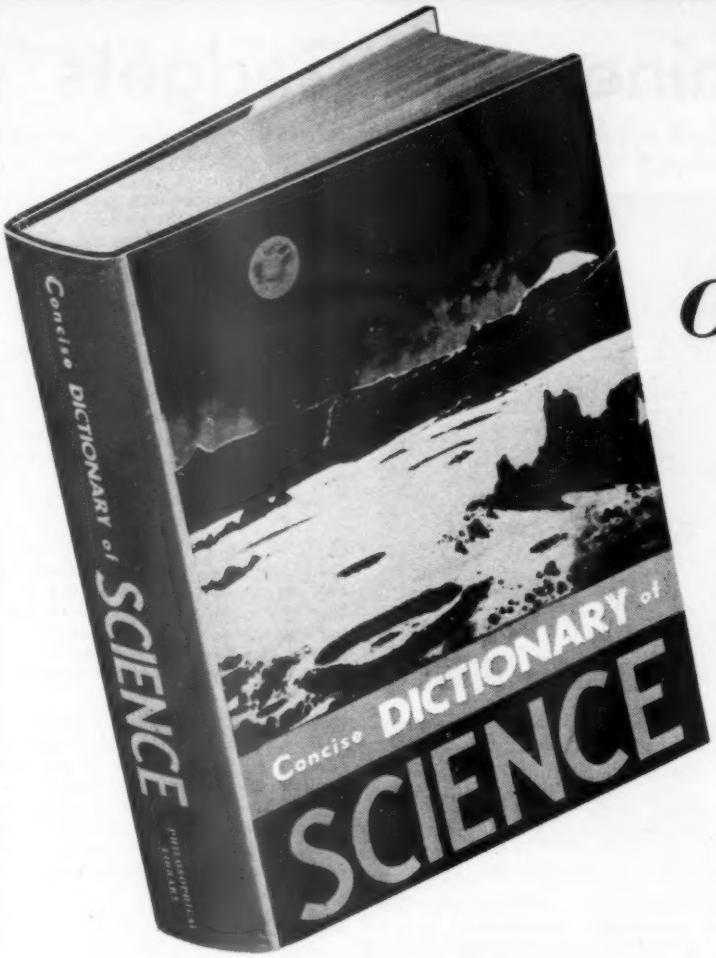

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• Science News Letter, 78:286 October 29, 1960

TELEPHONE CHIME turns a telephone's harsh ring into a more pleasing sound. At the beginning of the ringing cycle the instrument emits a single bell tone followed by a chime at the end, repeated at three-second intervals until the call is answered.

• Science News Letter, 78:286 October 29, 1960

BIKE BRAKE-TRANSMISSION UNIT with two-speed gearshift eliminates handlebar controls, cable controls or caliper-type brakes. To shift gears, the cyclist merely back-pedals about two inches. When the brake is applied the unit automatically uses the extra braking of the low gear. The entire mechanism is contained in a hub that may be installed as simply as a regular brake.

• Science News Letter, 78:286 October 29, 1960

STAINLESS STEEL PANELS, shown in the photograph, are a combination of the ultra-thin steel bonded to various backup

materials. Easily cut with a special handsaw, the panels can be used in anything from a skyscraper to a homemade shower stall.

• Science News Letter, 78:286 October 29, 1960

MINIATURE ELECTRIC WATER PUMP may be used to create miniature waterfalls, fountains in tiny gardens or in realistic HO gage railroad backdrops. With two D-batteries in series, the unit will pump to 24 inches high. It is less than three inches tall.

• Science News Letter, 78:286 October 29, 1960

MULTI-PURPOSE SPATULA has a sharp edge for use as a knife, holes that permit use as a strainer, and a prong for use as a fork for turning bacon and other foods. The stainless steel spatula also doubles as a beater. Its laminated wood handle is grease- and burn-proof.

• Science News Letter, 78:286 October 29, 1960

TINY RADIO is so small it clips over and is supported by the wearer's ear. Made with an unbreakable plastic case in red, blue or tan, the complete receiver weighs less than an ounce. It operates up to 100 hours on two "penlite" batteries.

• Science News Letter, 78:286 October 29, 1960

INFRARED VIEWER, a portable unit that weighs two and a half pounds with batteries, is designed to make the usually invisible infrared light useful for police work, medical research and as a photographic dark room light. The gun-like unit is completely self-contained, including optics.

• Science News Letter, 78:286 October 29, 1960

Nature Ramblings

WHEN PUMPKINS become Hallowe'en jack-o-lanterns, the most popular melon is the Connecticut field pumpkin, also known as the common cornfield, or pie, pumpkin. This is the largest variety of *Cucurbita pepo*, the true pumpkins, and weighs from five to 30 pounds.

The small sugar, winter luxury and golden oblong varieties are small pumpkins of differing characters and are generally considered of better quality than field varieties.

One type, the table queen, is sometimes called the Des Moines or acorn squash, but is really a pumpkin. Although the flesh is yellow, the skin is a dark, glossy green.

There is little doubt that pumpkins originated on this continent, but they are not known anywhere in the wild state. Like the corn they grow with, the Indians had them in cultivation but knew nothing of their source when the white man first arrived.

Unlike corn, however, pumpkins have relatives all over the world, and the modern varieties have become much mixed with

Pumpkin

foreign stocks from Asia and Africa, which give us our amazing assortment of squashes, melons and gourds.

Whatever the source or type, if someone tries to tell you his bushel-sized specimen got that way by being fed milk from a bowl, chances are he is trying to put one over on you. Agricultural experts debunk these stories as myths. The best way to produce a big melon, they say, is to give it excellent growing conditions and remove all the other fruits from the vine.

—GLORIA BALL

• Science News Letter, 78:286 October 29, 1960

Do You Know

Red is the most widely used of organic *color* pigments in the United States.

Malnutrition and alcoholism are two of the main causes of *liver disease*, probably the most common serious chronic illness in the world today.

The *enrollment* in U. S. medical schools has increased by only 275 a year in the past five years.

Persons who are hard of hearing or deaf may will their inner *ear* structures to a Temporal Bone Bank for scientific research.

The world's largest laboratory solely for research into the cause and prevention of *deafness* will be built at the University of Michigan.

Nearly half of *poisonings* in the United States occur in children under the age of five, with the two-year-old the highest risk.

• Science News Letter, 78:286 October 29, 1960

Books of the Week

(Continued from p. 284)

Ovsiankina—*Wiley*, 483 p., $8.50. Directed to theory-minded readers from the ranks of clinicians and general psychologists.

THE SOVIET CULTURAL OFFENSIVE: The Role of Cultural Diplomacy in Soviet Foreign Policy —Frederick C. Barghoorn — *Princeton Univ. Press*, 353 p., $7.50. Thorough examination of Soviet foreign policy techniques, such as the complex amalgam of propaganda, deception, and sometimes mutually profitable transactions with non-Soviet states.

THE STORY OF MAN—Michel Lacre—*Grosset*, unpaged, illus. by Pierre Leroy, $2.95. Large-format picture book.

SYMPOSIUM ON AIR POLLUTION CONTROL—M. D. Thomas and others—*Am. Soc. for Testing Materials*, 44 p., $1.50. Emphasis is put on the problems of the San Francisco Bay area.

SYNTHETIC INORGANIC CHEMISTRY—William L. Jolly—*Prentice Hall*, 196 p., illus., $8. To accompany a text for courses in preparatory inorganic chemistry, including experiments.

U. S. MAIL: The Story of the United States Postal Service—Arthur E. Summerfield, as told to Charles Hurd—*Holt, Rinehart & Winston*, 256 p., illus., $5. A readable, documentary account.

ULTRASONICS—Benson Carlin—*McGraw*, 2nd ed., 309 p., illus., $11.50. Stresses engineering application and practical equipment design rather than theory.

THE UNCONSCIOUS BEFORE FREUD—Lancelot Law Whyte— *Basic Bks.*, 219 p., $4.50. A study in the development of human awareness of consciousness and of mental processes not directly conscious.

THE WATERSHED: A Biography of Johannes Kepler—Arthur Koestler, foreword by John Durston—*Doubleday*, 280 p., illus., paper, 95¢. This biography of the great astronomer is taken from author's 1959 book "The Sleepwalkers."

WHAT IS CYBERNETICS?—G. T. Guilbaud, transl. from French by Valerie MacKay—*Grove*, 126 p., illus., paper, $1.45. Non-mathematical book explaining this new school of thought about the organization of action.

WONDER-WORKERS OF THE INSECT WORLD —Hiram J. Herbert, foreword by Lucy W. Clausen—*Dutton*, 160 p., illus. with drawings by R. Gartland, $3. For young readers, close-ups of the life cycles of 14 insects, each representative of its species.

THE WONDERS I SEE—John K. Terres—*Lippincott*, 256 p., illus. with drawings by W. Ferguson, $5. Informative insights into the habits of birds, animals and insects.

• Science News Letter, 78:284 October 29, 1960

Questions

MEDICINE—How many percent of reportable cancer cases in Connecticut are leukemia? p. 275.

ROCKETS AND MISSILES—What purpose will a four-inch disk on the Ranger satellite serve? p. 279.

SEISMOLOGY—How many years has movement of the underlying rock of the San Andreas fault taken place? p. 280.

Photographs: Cover, General Electric Company; p. 275, column 1 & 2: F. C. Livingstone, column 3: Harvard University; p. 277, Smithsonian Institution; p. 278, Pitney Bowes, Inc.; p. 279, National Aeronautics and Space Administration; p. 282, U. S. Navy; p. 286, Mirawal Div., Birdsboro Corp.

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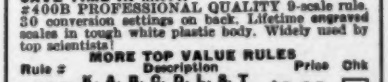

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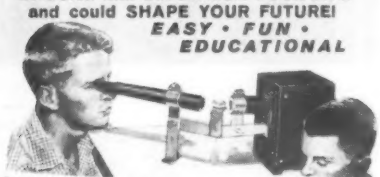

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